

July 3, 2001

Mr. John Gilkay  
Houba, Inc.  
16235 State Road 17  
Culver, Indiana 46511

Re: Registered Operation Status,  
**099-13728-00039**

Dear Mr. Gilkay:

The application from Houba, Inc., received on December 28, 2000, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following pharmaceutical products manufacturing and packaging source, to be located at 16236 State Road 17, Culver, Indiana 46511, is classified as registered:

- (a) The following equipment used in the processing and manufacture of Doxycycline hyclate:
- (1) One (1) natural gas-fired boiler, identified as 63042, constructed in September 1991 and exhausting through stack V-9, capacity: 0.69 million British thermal units per hour.
  - (2) Two (2) stainless steel vessels, identified as RE102 and TA109, capacities: 600 and 300 gallons, respectively.
  - (3) Four (4) glass-lined vessels, identified as RE101, RE103, RE105 and RE107, capacities: 500, 500, 500, and 300 gallons, respectively.
  - (4) One (1) plastic vessel, identified as TA108, capacity: 250 gallons.
  - (5) Four (4) forced air drying ovens, identified as DY103, DY104, DY111 and DY112, exhausting through stack V-2, with steam originating from boiler 63042. There is no combustion at these ovens.
  - (6) Three (3) forced air drying ovens, identified as DY106, DY107 and DY108, exhausting through stack V-3, with steam originating from boiler 63042. There is no combustion at these ovens.
  - (7) Three (3) methanol storage tanks, identified as ST102, ST103 and ST104, constructed in 1986, capacity: 1,000 gallons, each.
  - (8) Two (2) electric vacuum pumps, identified as VP101 and VP102, with VP101 exhausting through stack V-1.
  - (9) Two (2) plastic filter boxes, identified as FB106 and FB107.
  - (10) Three (3) sparkler filters, identified as SF101, SF102 and SF103, capacities: 3, 3 and 1 cubic feet, respectively.

- (b) The following equipment used in the processing and manufacture of Doxycycline monohydrate:
  - (1) One (1) natural gas-fired boiler, identified as 67479, constructed in 1993 and exhausting through stack V-10, capacity: 2.2 million British thermal units per hour.
  - (2) Three (3) glass-lined vessels, identified as RE203, RE206 and RE208, capacities: 300, 300, and 100 gallons, respectively.
  - (3) Two (2) vacuum drying ovens, identified as VD201 and VD202, with steam originating from boilers 63042 and 67479. There is no combustion at these ovens.
  - (4) Two (2) electric vacuum pumps, identified as VP201 and VP202, exhausting through stack V-8.
  - (5) One (1) plastic filter box, identified as FB201.
- (c) The following process equipment used in the processing and manufacture of both Doxycycline hyclate and Doxycycline monohydrate (the individual unit capacities are greater than the capacities based on the source capacity due to the batch nature of the operations):
  - (1) One (1) Fitzmill, equipped with a dust collector exhausting through stack V-4, capacity: 330 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
  - (2) One (1) encapsulator, equipped with a dust collector exhausting through stack V-6, capacity: 80 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
  - (3) One (1) oscillator, equipped with a dust collector exhausting through stack V-5, capacity: 880 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
  - (4) Two (2) tablet presses, equipped with dust collectors exhausting through stacks V-7A and V-7B, capacity: 40 pounds per hour, each, based on the unit capacity and 7 pounds per hour, each, based on the source capacity.
  - (5) One (1) packaging line, capacity: 175 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
- (d) One (1) acetone storage tank, identified as ST101, constructed in 1986, capacity: 1,000 gallons.

The following conditions shall be applicable:

- 1. Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary alternative opacity limitations), opacity shall meet the following:
  - (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period.
- 2. Any change or modification which may increase the potential to emit a combination of HAPs, VOC, SO<sub>2</sub>, NO<sub>x</sub>, PM or PM<sub>10</sub> to twenty five (25) tons per year, CO to one hundred (100) tons per year, or a single HAP to ten (10) tons per year from this source shall require approval from IDEM, OAQ prior to making the change.
- 3. Pursuant to 326 IAC 6-2-4 (Particulate Emissions Limitations for Sources of Indirect Heating), the PM from each of the two (2) boilers, identified as 63042 and 67479, shall not exceed 0.6 pound per million British thermal units.
- 4. Pursuant to 326 IAC 6-3-2, Process Operations, the following limitations are applicable:
  - (a) The particulate matter (PM) emissions from the one (1) Fitzmill shall not exceed 1.23 pounds per hour when operating at a process weight rate of 330 pounds per hour and 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour. The dust collector shall be in operation and control emissions from the Fitzmill at all times when the Fitzmill is in operation.
  - (b) The particulate matter (PM) emissions from the one (1) encapsulator shall not exceed 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour. The dust collector shall be in operation and control emissions from the encapsulator at all times when the encapsulator is in operation.
  - (c) The particulate matter (PM) emissions from the one (1) oscillator shall not exceed 2.37 pounds per hour when operating at a process weight rate of 880 pounds per hour and 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour. The dust collector shall be in operation and collect emissions from the oscillator at all times when the oscillator is in operation.
  - (d) The particulate matter (PM) emissions from the two (2) tablet presses shall not exceed 0.551 pounds per hour, each, when operating at a process weight rate of less than 100 pounds per hour, each. The dust collectors shall be in operation and control emissions from the tablet presses at all times when the tablet presses are in operation.
  - (e) The particulate matter (PM) emissions from the one (1) packaging line shall not exceed 0.802 pounds per hour when operating at a process weight rate of 175 pounds per hour and 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour.

These limitations are based upon the following:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67}$$

where E = rate of emission in pounds per hour and  
P = process weight rate in tons per hour

5. Pursuant to 326 IAC 8-5-3, the control requirements for equipment used in the processing and manufacture of Doxycycline hyclate, which have the potential to emit VOC, are:
  - (a) VOC emissions from all reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers shall be controlled by surface condensers or equivalent controls.
    - (1) If the surface condensers are used, the condenser outlet gas temperature must not exceed:
      - (A) minus twenty-five degrees Celsius (-25EC) when condensing VOC of vapor pressure greater than forty (40) kiloPascals (five and eight-tenths (5.8) pounds per square inch).
      - (B) minus fifteen degrees Celsius (-15EC) when condensing VOC of vapor pressure greater than twenty (20) kiloPascals (two and nine-tenths (2.9) pounds per square inch).
      - (C) zero degrees Celsius (0EC) when condensing VOC of vapor pressure greater than ten (10) kiloPascals (one and five-tenths (1.5) pounds per square inch).
      - (D) ten degrees Celsius (10EC) when condensing VOC of vapor pressure greater than seven (7) kiloPascals (one (1) pound per square inch).
      - (E) twenty-five degrees Celsius (25EC) when condensing VOC of vapor pressure greater than three and five-tenths (3.5) kiloPascals (five-tenths (0.5) pound per square inch).
    - (2) The vapor pressures listed above shall be measured at twenty degrees Celsius (20EC).
    - (3) If equivalent controls are used, the VOC emissions must be reduced by at least as much as they would be by using a surface condenser which meets the requirements above.
  - (b) The owner or operator of this synthesized pharmaceutical manufacturing facility shall:
    - (1) provide a vapor balance system or equivalent control that is at least ninety percent (90%) effective in reducing emissions from truck or railcar deliveries to storage tanks with capacities greater than seven thousand five hundred (7,500) liters (two thousand (2,000) gallons) that store VOC with vapor pressures greater than twenty-eight (28) kiloPascals (four and one-tenth (4.1) pounds per square inch) at twenty degrees Celsius (20EC); and
    - (2) install pressure/vacuum conservation vents set at plus or minus two-tenths ( $\pm 0.2$ ) kiloPascals on all storage tanks that store VOC with vapor pressures greater than ten (10) kiloPascals (one and five-tenths (1.5) pounds per square inch) at twenty degrees Celsius (20EC), unless a more effective control system is used.

- (c) The owner or operator of this synthesized pharmaceutical facility shall enclose all centrifuges, rotary vacuum filters, and other filters having an exposed liquid surface, where the liquid contains VOC and exerts a total VOC vapor pressure of three and five-tenths (3.5) kiloPascals (five-tenths (0.5) pounds per square inch) or more at twenty degrees Celsius (20EC).
  - (d) The owner or operator of this synthesized pharmaceutical facility shall install covers on all inprocess tanks containing a volatile organic compound at any time. These covers must remain closed, unless production, sampling, maintenance or inspection procedures require operator access.
  - (e) The owner or operator of this synthesized pharmaceutical facility shall repair all leaks from which a liquid, containing VOC, can be observed running or dripping. The repair shall be completed the first time the equipment is off line for a period of time long enough to complete the repair.
- 6. In order to determine compliance with Condition 5, the owner or operator shall determine the condenser outlet gas temperatures on all reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers used in the processing and manufacture of Doxycycline hyclate once per day while the facility is in operation. The instrument employed to measure temperature shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ( $\pm 2\%$ ) of full scale reading.
- 7. In order to determine compliance with Condition 5, the owner or operator shall inspect all VOC containers used in the processing and manufacture of Doxycycline hyclate for leaks once per day while the source is in operation.
- 8. Records of the VOC container inspections and condenser outlet gas temperatures shall be retained for a period of at least five (5) years from the date of monitoring sample or measurement. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time. All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.
- 9. The following conditions from previous permits are no longer applicable:
  - (a) From Exemption 099-2563-00039, issued on June 30, 1992, "Any change or modification which may increase the potential emissions to fifteen (15) pounds of VOC per day or more from the equipment covered in this letter must be approved by the Office of Air Management before such change may occur," is not applicable because this registration incorporates all facilities at this source into a single registration. Therefore, the potential to emit VOC can exceed fifteen (15) pounds per day without IDEM, OAQ, approval. However, the potential to emit VOC cannot exceed twenty-five (25) tons per year from the entire source without prior IDEM, OAQ, approval. Some facilities at this source are subject to 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations).
  - (b) From Exemption 099-4316-00039, issued on December 14, 1993, "Any change or modification which may increase the potential emissions to fifty (50) pounds of

sulfur dioxide per day or more from the equipment covered in this letter must be approved by the Office of Air Management before such change may occur,” is not applicable because the source does not operate a no. 2 fuel oil fired sintering furnace.

- (c) From Registration 099-4316-00039, issued on April 6, 1995, “Pursuant to 326 IAC 8-5-3, volatile organic compounds (VOC) emissions from all reactors and vacuum dryers shall be controlled by surface condensers or equivalent controls and the condenser outlet gas temperature must not exceed minus fifteen degrees Celsius (-15EC). All filters having an exposed liquid surface shall be enclosed,” is not applicable because Acetone is no longer considered a VOC. The Doxycycline monohydrate production was subject to the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations) because the potential to emit Acetone was greater than fifteen (15) pounds per day. Since the potential to emit VOC from the Doxycycline monohydrate production is less than fifteen (15) pounds per day, the Doxycycline monohydrate production is not subject to the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations).

Therefore, Exemption 099-3259-00039, the requirement of obtaining IDEM, OAQ, approval before the potential to emit VOC exceeds fifteen (15) pounds per day, and the 326 IAC 8-5-3 requirements for Doxycycline monohydrate production are hereby rescinded.

10. Any change or modification that increases the potential to emit VOC from the Doxycycline monohydrate production to fifteen (15) pounds per day or more shall make the facilities subject to the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations) and shall require prior IDEM, OAQ, approval.

This registration incorporates all previous approvals into a single registration which accurately represents the source and all current operations. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

**Compliance Data Section  
Office of Air Quality  
100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, IN 46206-6015**

no later than March 1 of each year, with the annual notice being submitted in the format attached.

Houba, Inc.  
Culver, Indiana

Page 7 of 8  
Registration 099-13728-00039

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Original Signed by Paul Dubenetzky  
Paul Dubenetzky, Chief  
Permits Branch  
Office of Air Quality

CAO/MES

cc: File - Marshall County  
Marshall County Health Department  
Air Compliance - Rick Reynolds  
Northern Regional Office  
Permit Tracking - Janet Mobley  
Air Programs Section- Michele Boner

<b>Registration Annual Notification</b>
---

This form should be used to comply with the notification requirements under 326 IAC 2-5.5-4(a)(3).

<b>Company Name:</b>	<b>Houba, Inc.</b>
<b>Address:</b>	<b>16235 State Road 17</b>
<b>City:</b>	<b>Culver</b>
<b>Authorized individual:</b>	<b>John Gilkay</b>
<b>Phone #:</b>	<b>(219) 842-3305</b>
<b>Registration #:</b>	<b>099-13728-00039</b>

I hereby certify that Houba, Inc. is still in operation and is in compliance with the requirements of Registration **099-13728-00039**.

<b>Name (typed):</b>
<b>Title:</b>
<b>Signature:</b>
<b>Date:</b>



## **Indiana Department of Environmental Management Office of Air Quality**

### **Technical Support Document (TSD) for a Registration**

#### **Source Background and Description**

<b>Source Name:</b>	<b>Houba, Inc.</b>
<b>Source Location:</b>	<b>16236 State Road 17, Culver, Indiana 46511</b>
<b>County:</b>	<b>Marshall</b>
<b>SIC Code:</b>	<b>2834</b>
<b>Registration No.:</b>	<b>R 099-13728-00039</b>
<b>Permit Reviewer:</b>	<b>CarrieAnn Ortolani</b>

The Office of Air Quality (OAQ) has reviewed an application from Houba, Inc. relating to the operation of a pharmaceutical products manufacturing and packaging source. All facilities have been previously permitted. The applicant requested this review to incorporate all previous approvals into a single registration which accurately represents the source and all current operations.

#### **Permitted Emission Units and Pollution Control Equipment**

The source consists of the following permitted emission units and pollution control devices:

- (a) The following equipment used in the processing and manufacture of Doxycycline hyclate:
- (1) One (1) natural gas-fired boiler, identified as 63042, constructed in September 1991 and exhausting through stack V-9, capacity: 0.69 million British thermal units per hour.
  - (2) Two (2) stainless steel vessels, identified as RE102 and TA109, capacities: 600 and 300 gallons, respectively.
  - (3) Four (4) glass-lined vessels, identified as RE101, RE103, RE105 and RE107, capacities: 500, 500, 500, and 300 gallons, respectively.
  - (4) One (1) plastic vessel, identified as TA108, capacity: 250 gallons.
  - (5) Four (4) forced air drying ovens, identified as DY103, DY104, DY111 and DY112, exhausting through stack V-2, with steam originating from boiler 63042. There is no combustion at these ovens.
  - (6) Three (3) forced air drying ovens, identified as DY106, DY107 and DY108, exhausting through stack V-3, with steam originating from boiler 63042. There is no combustion at these ovens.
  - (7) Three (3) methanol storage tanks, identified as ST102, ST103 and ST104, constructed in 1986, capacity: 1,000 gallons, each.

- (8) Two (2) electric vacuum pumps, identified as VP101 and VP102, with VP101 exhausting through stack V-1.
- (9) Two (2) plastic filter boxes, identified as FB106 and FB107.
- (10) Three (3) sparkler filters, identified as SF101, SF102 and SF103, capacities: 3, 3 and 1 cubic feet, respectively.
- (b) The following equipment used in the processing and manufacture of Doxycycline monohydrate:
  - (1) One (1) natural gas-fired boiler, identified as 67479, constructed in 1993 and exhausting through stack V-10, capacity: 2.2 million British thermal units per hour.
  - (2) Three (3) glass-lined vessels, identified as RE203, RE206 and RE208, capacities: 300, 300, and 100 gallons, respectively.
  - (3) Two (2) vacuum drying ovens, identified as VD201 and VD202, with steam originating from boilers 63042 and 67479. There is no combustion at these ovens.
  - (4) Two (2) electric vacuum pumps, identified as VP201 and VP202, exhausting through stack V-8.
  - (5) One (1) plastic filter box, identified as FB201.
- (c) The following process equipment used in the processing and manufacture of both Doxycycline hyclate and Doxycycline monohydrate (the individual unit capacities are greater than the capacities based on the source capacity due to the batch nature of the operations):
  - (1) One (1) Fitzmill, equipped with a dust collector exhausting through stack V-4, capacity: 330 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
  - (2) One (1) encapsulator, equipped with a dust collector exhausting through stack V-6, capacity: 80 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
  - (3) One (1) oscillator, equipped with a dust collector exhausting through stack V-5, capacity: 880 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
  - (4) Two (2) tablet presses, equipped with dust collectors exhausting through stacks V-7A and V-7B, capacity: 40 pounds per hour, each, based on the unit capacity and 7 pounds per hour, each, based on the source capacity.
  - (5) One (1) packaging line, capacity: 175 pounds per hour based on the unit capacity and 7 pounds per hour based on the source capacity.
- (d) One (1) acetone storage tank, identified as ST101, constructed in 1986, capacity: 1,000 gallons.

### **Unpermitted Emission Units and Pollution Control Equipment**

There are no unpermitted facilities operating at this source during this review process.

### **New Emission Units and Pollution Control Equipment**

There are no new facilities/units requiring approval during this review.

### **Existing Approvals**

The source has been operating under previous approvals including, but not limited to, the following:

- (a) R 099-2327-00039, issued on May 7, 1992;
- (b) Exemption 099-2563-00039, issued on June 30, 1992;
- (c) Exemption 099-4316-00039, issued on December 14, 1993;
- (d) R 099-4316-00039, issued on April 6, 1995; and
- (e) Amendment to Registration 099-4316-00039, issued on April 20, 1995.

All conditions from previous approvals were incorporated into this permit except the following:

- (a) Exemption 099-2563-00039, issued on June 30, 1992

The following paragraph:

Any change or modification which may increase the potential emissions to fifteen (15) pounds of VOC per day or more from the equipment covered in this letter must be approved by the Office of Air Management before such change may occur.

Reason not incorporated: This registration incorporates all facilities at this source into a single registration. Therefore, the potential to emit VOC can exceed fifteen (15) pounds per day without IDEM, OAQ, approval. However, the potential to emit VOC cannot exceed twenty-five (25) tons per year from the entire source without prior IDEM, OAQ, approval. Some facilities at this source are subject to 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations).

- (b) Exemption 099-4316-00039, issued on December 14, 1993

The following paragraph:

Any change or modification which may increase the potential emissions to fifty (50) pounds of sulfur dioxide per day or more from the equipment covered in this letter must be approved by the Office of Air Management before such change may occur.

Reason not incorporated: The source does not operate a no. 2 fuel oil fired sintering furnace. Therefore, Exemption 099-3259-00039 is rescinded.

- (c) Registration 099-4316-00039, issued on April 6, 1995

The following paragraph:

Pursuant to 326 IAC 8-5-3, volatile organic compounds (VOC) emissions from all reactors and vacuum dryers shall be controlled by surface condensers or equivalent controls and the condenser outlet gas temperature must not exceed minus fifteen degrees Celsius (-15EC). All filters having an exposed liquid surface shall be enclosed.

Reason not incorporated: Acetone is no longer considered a VOC. The Doxycycline monohydrate production was subject to the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations) because the potential to emit Acetone was greater than fifteen (15) pounds per day. Since the potential to emit VOC from the Doxycycline monohydrate production is less than fifteen (15) pounds per day, the Doxycycline monohydrate production is not subject to the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations).

### Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (EF)
V-1	Vacuum Pump VP101	24.0	0.33	unknown	Ambient
V-2	Dryers DY103, DY104, DY111, DY112	14.0	1.50	unknown	120
V-3	Dryers DY106, DY107, DY108	14.0	1.00	unknown	100
V-4	Milling dust collector	12.0	0.50	300	Ambient
V-5	Oscillator dust collector	4.0	0.33	300	Ambient
V-6	Encapsulation dust collectors	4.0	0.33	300	Ambient
V-7	Tableting dust collectors	4.0	0.33	300	Ambient
V-8	Vacuum pumps VP201, VP202	26.0	0.33	unknown	Ambient
V-9	Boiler 63042	24.0	0.67	unknown	140
V-10	Boiler 67479	26.0	1.00	unknown	140

### Enforcement Issue

There are no enforcement actions pending.

### Recommendation

The staff recommends to the Commissioner that the operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on December 28, 2000, with additional information received on May 17, 2001, June 7, 2001 and June 11, 2001.

### Emission Calculations

See pages 1 through 4 of 4 of Appendix A of this document for detailed emissions calculations.

### Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency.”

<b>Pollutant</b>	<b>Potential To Emit (tons/year)</b>
PM	19.1
PM <sub>10</sub>	19.2
SO <sub>2</sub>	0.008
VOC	4.36
CO	1.06
NO <sub>x</sub>	1.26

<b>HAPs</b>	<b>Potential To Emit (tons/year)</b>
Benzene	0.00003
Dichlorobenzene	0.00002
Formaldehyde	0.00095
Hexane	0.02278
Toluene	0.00004
Lead	0.00001
Cadmium	0.00001
Chromium	0.00002
Manganese	0.000005
Methanol	3.58

HAPs	Potential To Emit (tons/year)
Hydrogen Chloride	negligible
Nickel	0.00003
TOTAL	3.56

- (a) The potentials to emit (as defined in 326 IAC 2-5.1-2) of PM and PM<sub>10</sub> are less than twenty-five (25) tons per year and greater than five (5) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-5.1-2.
- (b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of any single HAP is less than ten (10) tons per year and the potential to emit (as defined in 326 IAC 2-7-1(29)) of a combination HAPs is less than twenty-five (25) tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

#### Actual Emissions

No previous emission data has been received from the source.

#### Limited Potential to Emit

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units.

	Limited Potential to Emit (tons/year)						
Process/facility	PM	PM <sub>10</sub>	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs
Doxycycline hyclate manufacturing equipment excluding process equipment listed in (c)	0.006	0.023	0.002	4.30	0.254	0.302	3.58
Doxycycline monohydrate manufacturing equipment excluding process equipment listed in (c)	0.018	0.073	0.006	less than 2.74	0.809	0.964	0.018
Process Equipment used in manufacturing both Doxycycline hyclate and Doxycycline monohydrate	2.41	2.41	0.00	0.00	0.00	0.00	0.00
Total Emissions	less than 25	less than 25	less than 25	less than 25	less than 100	less than 25	less than 10 individual; less than 25 total

### County Attainment Status

The source is located in Marshall County.

Pollutant	Status
PM <sub>10</sub>	attainment
SO <sub>2</sub>	attainment
NO <sub>2</sub>	attainment
Ozone	attainment
CO	attainment
Lead	attainment

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO<sub>x</sub>) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Marshall County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO<sub>x</sub> emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR Part 52.21.
- (b) Marshall County has been classified as attainment or unclassifiable for all remaining criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

### Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (tons/yr)
PM	19.1
PM <sub>10</sub>	19.2
SO <sub>2</sub>	0.008
VOC	4.36
CO	1.06
NO <sub>x</sub>	1.26

- (a) This existing source is **not** a major stationary source because even though it is one of the 28 listed source categories, it does not emit one hundred (100) tons per year or greater of any regulated pollutants.
- (b) These emissions were based on the potential to emit of the entire source.

(c) Fugitive Emissions

Since this type of operation is one of the twenty-eight (28) listed source categories under 326 IAC 2-2, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are counted toward determination of PSD and Emission Offset applicability.

**Part 70 Permit Determination**

326 IAC 2-7 (Part 70 Permit Program)

This existing source, including the emissions from this Registration, R 099-13728-00039, is still not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than one hundred (100) tons per year,
- (b) a single hazardous air pollutant (HAP) is less than ten (10) tons per year, and
- (c) any combination of HAPS is less than 25 tons per year.

This status is based on all the air approvals issued to the source. This status has been verified by the OAQ inspector assigned to the source.

**Federal Rule Applicability**

- (a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this source.
- (b) The two (2) boilers are not subject to the requirements of the New Source Performance Standards, 326 IAC 12, (40 CFR Parts 60.40 and 60.40a, Subparts D and Da) because each boiler has a capacity less than 250 million British thermal units per hour.
- (c) The two (2) boilers are not subject to the requirements of the New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.40b, Subpart Db) because each boiler has a capacity less than 100 million British thermal units per hour.
- (d) Although the two (2) boilers are steam generating boilers, the two (2) boilers are not subject to the requirements of the New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.40c, Subpart Dc) because each boiler has a capacity less than ten (10) million British thermal units per hour.
- (e) The three (3) methanol storage tanks are not subject to the requirements of the New Source Performance Standards, 326 IAC 12, (40 CFR Parts 60.110, 60.110a and 60.110b, Subparts K, Ka and Kb) because each tank has a capacity less than forty (40) cubic meters.
- (f) This source is not subject to New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.480, Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry (SOCMI)), because the source does not produce, as intermediates or final products, one or more of the chemicals listed in 40 CFR 60.489. Therefore, this source is not a Synthetic Organic Chemical Manufacturing Industry (SOCMI) as defined by 40 CFR 60.481.
- (g) This source is not subject to New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.610, Subpart III, Standards of Performance for Volatile Organic Compounds (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation



Unit Processes), because the source does not produce any of the chemicals listed in 40 CFR 60.617 as a product, co-product, by-product or intermediate.

- (h) The source is not subject to New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.660, Subpart NNN, Standards of Performance for Volatile Organic Compounds (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations), because the facilities are operated as batch reactors.
- (i) The source is not subject to New Source Performance Standard, 326 IAC 12, (40 CFR Part 60.700, Subpart RRR, Standards of Performance for Volatile Organic Compounds (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes), because the facilities are operated as batch reactors.
- (j) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14, 326 IAC 20, 40 CFR 61 and 40 CFR Part 63) applicable to this source.

#### **State Rule Applicability - Entire Source**

##### **326 IAC 2-6 (Emission Reporting)**

This source is located in Marshall County and the potentials to emit PM<sub>10</sub>, CO, SO<sub>2</sub>, NO<sub>x</sub> and VOC are less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

##### **326 IAC 5-1 (Opacity)**

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary alternative opacity limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR Part 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

#### **State Rule Applicability - Individual Facilities**

##### **326 IAC 2-4.1-1 (New Source Toxics Control)**

Since the potential to emit each individual HAP is less than ten (10) tons per year and the potential to emit any combination of HAPs is less than twenty-five (25) tons per year, the requirements of 326 IAC 2-4.1-1 are not applicable.

##### **326 IAC 6-2-4 (Particulate Emissions Limitations for Sources of Indirect Heating)**

The two (2) natural gas-fired boilers were constructed after September 21, 1983. Therefore, the requirements of 326 IAC 6-2-4 are applicable to each of the two (2) boilers.

- (a) The one (1) boiler, identified as 63042, constructed in September 1991, with a maximum capacity of 0.69 million British thermal units per hour, must have PM emissions of no more than 0.6 pound per million British thermal units in order to comply with the particulate matter

emission rate specified by the following equation given in 326 IAC 6-2-4.

- (b) The one (1) boiler, identified as 67479, constructed in 1993, with a maximum capacity of 2.2 million British thermal units per hour, must have PM emissions of no more than 0.6 pound per million British thermal units in order to comply with the particulate matter emission rate specified by the following equation given in 326 IAC 6-2-4. The total source heat input capacity was 0.69 million British thermal units per hour prior to the construction of this boiler. Therefore, the total source maximum operating capacity including this boiler is 2.89 million British thermal units per hour.

$$Pt = 1.09/Q^{0.26}$$

where:

Pt = Pounds of particulate matter emitted per million British thermal units (lb/MMBtu) heat input

Q = Total source maximum operating capacity rating in million British thermal units per hour (MMBtu/hr) heat input. The maximum operating capacity rating is defined as the maximum capacity at which the facility is operated or the nameplate capacity, whichever is specified in the facility's permit application, except when some lower capacity is contained in the facility's operation permit; in which case, the capacity specified in the operation permit shall be used.

$$Pt \text{ (boiler 63042)} = 1.09/(0.69)^{0.26} = 1.20 \text{ lb/MMBtu heat input}$$
$$Pt \text{ (boiler 67479)} = 1.09/(2.89)^{0.26} = 0.827 \text{ lb/MMBtu heat input}$$

Pursuant to 326 IAC 6-2-4(a), for Q less than ten (10) million British thermal units per hour, Pt shall not exceed 0.6 pound per million British thermal unit. Therefore, the PM limit for each of the two (2) boilers is 0.6 pound per million British thermal unit. Based on Appendix A, the potential PM emission rate from the two (2) boilers limited to 0.6 pound PM per million British thermal units, each, is as follows:

Boiler 63042

$$0.006 \text{ tons/yr} \times (2000 \text{ lbs/ton} / 8760 \text{ hrs/yr}) = 0.003 \text{ lbs/hr}$$
$$(0.003 \text{ lbs/hr} / 0.69 \text{ MMBtu/hr}) = 0.002 \text{ lbs PM per MMBtu}$$

Boiler 67479

$$0.018 \text{ tons/yr} \times (2000 \text{ lbs/ton} / 8760 \text{ hrs/yr}) = 0.004 \text{ lbs/hr}$$
$$(0.004 \text{ lbs/hr} / 2.2 \text{ MMBtu/hr}) = 0.002 \text{ lbs PM per MMBtu}$$

Therefore, the two (2) boilers will comply with this rule.

#### 326 IAC 7-1 (Sulfur Dioxide Emission Limitations)

Since the potential to emit SO<sub>2</sub> from each of the two (2) boilers is less than 25 tons per year and 10 pounds per hour, the requirements of 326 IAC 7-1 are not applicable to either boiler.

#### 326 IAC 6-3-2 (Process Operations)

- (a) Pursuant to 326 IAC 6-3-2, Process Operations, the particulate matter (PM) from the one (1) Fitzmill shall not exceed 1.23 pounds per hour when operating at a process weight rate of 330 pounds per hour and 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour. Since the potential to emit PM from the Fitzmill after

control by the dust collector is 0.001 pounds per hour, the Fitzmill will comply with this rule. The dust collector must be in operation at all times the Fitzmill is in operation, in order to comply with this limit.

- (b) Pursuant to 326 IAC 6-3-2, Process Operations, the particulate matter (PM) from the one (1) encapsulator shall not exceed 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour. Since the potential to emit PM from the encapsulator after control by the dust collector is 0.001 pounds per hour, the encapsulator will comply with this rule. The dust collector must be in operation at all times the encapsulator is in operation, in order to comply with this limit.
- (c) Pursuant to 326 IAC 6-3-2, Process Operations, the particulate matter (PM) from the one (1) oscillator shall not exceed 2.37 pounds per hour when operating at a process weight rate of 880 pounds per hour and 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour. Since the potential to emit PM from the oscillator after control by the dust collector is 0.001 pounds per hour, the oscillator will comply with this rule. The dust collector must be in operation at all times the oscillator is in operation, in order to comply with this limit.
- (d) Pursuant to 326 IAC 6-3-2, Process Operations, the particulate matter (PM) from the two (2) tablet presses shall not exceed 0.551 pounds per hour, each, when operating at a process weight rate of less than 100 pounds per hour, each. Since the potential to emit PM from each tablet press after control by the dust collector is 0.001 pounds per hour, the two (2) tablet presses will comply with this rule. The dust collectors must be in operation at all times the tablet presses are in operation, in order to comply with this limit.
- (e) Pursuant to 326 IAC 6-3-2, Process Operations, the particulate matter (PM) from the one (1) packaging line shall not exceed 0.802 pounds per hour when operating at a process weight rate of 175 pounds per hour and 0.551 pounds per hour when operating at a process weight rate of less than 100 pounds per hour. Since the potential to emit PM from the packaging line is negligible, the packaging line will comply with this rule.

These limitations are based upon the following:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

#### 326 IAC 8-1-6 (New Facilities; General Reduction Requirements)

Since the potential to emit VOC from the each facility at this source is less than twenty-five (25) tons per year, the requirements of 326 IAC 8-1-6 are not applicable.

#### 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations)

- (a) This source manufactures pharmaceutical products by chemical synthesis. The potential to emit VOC is greater than fifteen (15) pounds per day when producing Doxycycline hyclate intermediate. Therefore, the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations) are applicable to all facilities involved in the production of Doxycycline hyclate that can potentially emit VOC. Pursuant to 326 IAC 8-5-3, the control requirements for the Doxycycline hyclate production facilities

are as follows:

- (1) VOC emissions from all reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers shall be controlled by surface condensers or equivalent controls.
  - (A) If the surface condensers are used, the condenser outlet gas temperature must not exceed:
    - (i) minus twenty-five degrees Celsius (-25EC) when condensing VOC of vapor pressure greater than forty (40) kiloPascals (five and eight-tenths (5.8) pounds per square inch).
    - (ii) minus fifteen degrees Celsius (-15EC) when condensing VOC of vapor pressure greater than twenty (20) kiloPascals (two and nine-tenths (2.9) pounds per square inch).
    - (iii) zero degrees Celsius (0EC) when condensing VOC of vapor pressure greater than ten (10) kiloPascals (one and five-tenths (1.5) pounds per square inch).
    - (iv) ten degrees Celsius (10EC) when condensing VOC of vapor pressure greater than seven (7) kiloPascals (one (1) pound per square inch).
    - (v) twenty-five degrees Celsius (25EC) when condensing VOC of vapor pressure greater than three and five-tenths (3.5) kiloPascals (five-tenths (0.5) pound per square inch).
  - (B) The vapor pressures listed above shall be measured at twenty degrees Celsius (20EC).
  - (C) If equivalent controls are used, the VOC emissions must be reduced by at least as much as they would be by using a surface condenser which meets the requirements above.
- (2) The owner or operator of this synthesized pharmaceutical manufacturing facility shall:
  - (A) provide a vapor balance system or equivalent control that is at least ninety percent (90%) effective in reducing emissions from truck or railcar deliveries to storage tanks with capacities greater than seven thousand five hundred (7,500) liters (two thousand (2,000) gallons) that store VOC with vapor pressures greater than twenty-eight (28) kiloPascals (four and one-tenth (4.1) pounds per square inch) at twenty degrees Celsius (20EC) (there are no such tanks at this source); and
  - (B) install pressure/vacuum conservation vents set at plus or minus two-tenths ( $\pm 0.2$ ) kiloPascals on all storage tanks that store VOC with vapor pressures greater than ten (10) kiloPascals (one and five-tenths (1.5) pounds per square inch) at twenty degrees Celsius (20EC), unless a more effective control system is used.
- (3) The owner or operator of this synthesized pharmaceutical facility shall enclose all

centrifuges, rotary vacuum filters, and other filters having an exposed liquid surface, where the liquid contains VOC and exerts a total VOC vapor pressure of three and five-tenths (3.5) kiloPascals (five-tenths (0.5) pounds per square inch) or more at twenty degrees Celsius (20EC).

- (4) The owner or operator of this synthesized pharmaceutical facility shall install covers on all inprocess tanks containing a volatile organic compound at any time. These covers must remain closed, unless production, sampling, maintenance or inspection procedures require operator access.
  - (5) The owner or operator of this synthesized pharmaceutical facility shall repair all leaks from which a liquid, containing VOC, can be observed running or dripping. The repair shall be completed the first time the equipment is off line for a period of time long enough to complete the repair.
- (b) Acetone is no longer considered a VOC. Pursuant to R099-4316-00039, issued on April 6, 1995, the Doxycycline monohydrate production was subject to the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations) because the potential to emit Acetone was greater than fifteen (15) pounds per day. Since the potential to emit VOC from the Doxycycline monohydrate production is less than fifteen (15) pounds per day, the Doxycycline monohydrate production is not subject to the requirements of 326 IAC 8-5-3 (Miscellaneous operations: synthesized pharmaceutical manufacturing operations).

## Conclusion

The operation of this pharmaceutical products manufacturing and packaging source shall be subject to the conditions of the attached Registration 099-13728-00039.

**Appendix A: Emission Calculations  
VOC and HAP Emissions**

**Company Name:** Houba, Inc.  
**Address City IN Zip:** 16235 State Road 17, Culver, Indiana 46511  
**Registration:** 099-13728  
**Plt ID:** 099-00039  
**Reviewer:** CarrieAnn Ortolani/ MES  
**Date:** December 28, 2000

Process	Material Emitted to Atmosphere	Usage Rate (lbs/batch)	Batches per year	Weight % VOC	Weight % HAP	Vacuum Pump Loss Factor (kg/kg)	Drying Loss Factor (kg/kg)	VOC Emissions (tons/yr)	HAP Emissions (tons/yr)
Doxycycline hyclate final product	Ethanol	875	153	100.0%	0.0%	0.001	0.010	0.710	0.00
	Acetone	842	153	0.0%	0.0%	0.000	0.001	0.00	0.00
	Water	417	153	0.0%	0.0%	0.001	0.007	0.00	0.00
Doxycycline hyclate intermediate	Methanol	2218	205	100.0%	100.0%	0.001	0.014	3.54	3.54
	Acetone	104	205	0.0%	0.0%	0.009	0.079	0.00	0.00
Doxycycline monohydrate	Water	661	51	0.0%	0.0%	0.001	0.009	0.00	0.00
	Acetone	262	51	0.0%	0.0%	0.004	0.040	0.00	0.00
<b>Totals:</b>								<b>4.25</b>	<b>3.54</b>

None of the materials used at this source are heated to decomposition.

Therefore, there are no phosphate emissions from Triphenylphosphine usage, no SOx from p-Toluene Sulfonic Acid emissions and no NOx or HCl from Proprietary Intermediate usage. This source may also emit negligible amounts of hydrogen chloride and NOx from these processes.

**Methodology**

The loss factors were provided by the applicant based on a chemical analysis of the product and knowledge of the input to the process.

Batches/year = batches/50 week operating period x 52 weeks per year/50 weeks operated

VOC Emissions (tons/yr) = Usage rate (lbs/batch) x Batches per year x Weight % VOC x (Vacuum Pump Loss Factor including fugitive losses + Drying loss factor) / 2000 lbs/ton

HAP Emissions (tons/yr) = Usage rate (lbs/batch) x Batches per year x Weight % HAP x (Vacuum Pump Loss Factor including fugitive losses + Drying loss factor) / 2000 lbs/ton

Acetone and water are not VOC

Tanks	Emissions (tons/yr)
Methanol	0.037

Tank emissions calculated with Tanks 4.0

**Appendix A: Emission Calculations  
Process Operations**

**Company Name: Houba, Inc.**  
**Address City IN Zip: 16235 State Road 17, Culver, Indiana 46511**  
**Registration: 099-13728**  
**Plt ID: 099-00039**  
**Reviewer: CarrieAnn Ortolani/ MES**  
**Date: December 28, 2000**

Unit ID	Control Efficiency (%)	Grain Loading per Actual Cubic foot of Inlet Air (grains/cub. ft.)	Gas or Air Flow Rate (acfm.)	Emission Rate before Controls (lb/hr)	Emission Rate before Controls (tons/yr)	Emission Rate after Controls (lb/hr)	Emission Rate after Controls (tons/yr)
V-4	99.9%	0.340	300.0	0.874	3.83	0.0009	0.0038
V-5	99.9%	0.340	300.0	0.874	3.83	0.0009	0.0038
V-6	99.9%	0.340	300.0	0.874	3.83	0.0009	0.0038
V-7A	99.9%	0.340	300.0	0.874	3.83	0.0009	0.0038
V-7B	99.9%	0.340	300.0	0.874	3.83	0.0009	0.0038
<b>Totals:</b>				<b>4.37</b>	<b>19.1</b>	<b>0.004</b>	<b>0.019</b>

**Methodology**

Emission Rate in lbs/hr (before controls) = (grains/cub. ft. inlet air) x (acfm) x (60 min/hr) x (lb/7000 grains)

Emission Rate in lbs/hr (after controls) = Emission Rate (before controls) x (1-control efficiency)

Emission Rate in tons/yr = (lbs/hr) x (8760 hrs/yr) x (1 ton/2000 lbs)

**Appendix A: Emissions Calculations  
Natural Gas Combustion Only  
MM BTU/HR <100  
Small Industrial Boiler**

Page 3 of 4 TSD App A

**Company Name: Houba, Inc.  
Address City IN Zip: 16235 State Road 17, Culver, Indiana 46511  
Registration: 099-13728  
Plt ID: 099-00039  
Reviewer: CarrieAnn Ortolani/ MES  
Date: December 28, 2000**

Heat Input Capacity  
MMBtu/hr

0.690

Potential Throughput  
MMCF/yr

6.04

Pollutant						
Emission Factor in lb/MMCF	PM*	PM10*	SO2	NOx	VOC	CO
	1.9	7.6	0.6	100.0	5.5	84.0
				**see below		
Potential Emission in tons/yr	0.006	0.023	0.002	0.302	0.017	0.254

\*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

\*\*Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Heat Input Capacity  
MMBtu/hr

2.200

Potential Throughput  
MMCF/yr

19.27

Pollutant						
Emission Factor in lb/MMCF	PM*	PM10*	SO2	NOx	VOC	CO
	1.9	7.6	0.6	100.0	5.5	84.0
				**see below		
Potential Emission in tons/yr	0.018	0.073	0.006	0.964	0.053	0.809

\*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

\*\*Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

**Methodology**

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 4 for HAPs emissions calculations.



**Appendix A: Emissions Calculations**  
**Natural Gas Combustion Only**  
**MM BTU/HR <100**  
**Small Industrial Boiler**  
**HAPs Emissions**

Page 4 of 4 TSD App A

**Company Name:** Houba, Inc.  
**Address City IN Zip:** 16235 State Road 17, Culver, Indiana 46511  
**Registration:** 099-13728  
**Plt ID:** 099-00039  
**Reviewer:** CarrieAnn Ortolani/ MES  
**Date:** December 28, 2000

HAPs - Organics

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	2.66E-05	1.52E-05	9.49E-04	2.28E-02	4.30E-05

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03	Total HAPs
Potential Emission in tons/yr	6.33E-06	1.39E-05	1.77E-05	4.81E-06	2.66E-05	0.024

Methodology is the same as page 3.

The five highest organic and metal HAPs emission factors are provided above.  
Additional HAPs emission factors are available in AP-42, Chapter 1.4.